

REMARKS

I. Status of the Application

Claims 1-26 are all the claims pending in the present application. Claims 1-26 have been rejected. The present Amendment addresses each point of rejection raised by the Examiner. Favorable reconsideration is respectfully requested.

II. Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-19, 21-23, 25, and 26

Claims 1-3, 5-18, 21, 23, 25, and 26 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over JP 08-062426 to Aihara et al. (hereinafter “Aihara”) in view of JP 05-249320 to Furukawa et al. (hereinafter “Furukawa”). Claim 4 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Aihara in view of Furukawa and JP 11-149073 to Kunishige. Claim 19 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Aihara in view of Furukawa and U.S. Publication No. 2003/0210210 to Ide et al. (hereinafter “Ide”). Claim 22 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Aihara in view of Furukawa and U.S. Patent No. 5,402,324 to Yokoyama et al. (hereinafter “Yokoyama”).

Aihara is directed to a backlight of a liquid crystal display (¶ [0001]). As shown in Figs. 1 and 2 of Aihara, the light guide plate 11 has a rectangular light exit surface (¶ [0008]). The light guide plate 11 is thicker at a central portion and thinner at the edges (¶ [0008]). A rectangular-shaped slot 14 accommodates a fluorescent tube 12 in the center of the light guide plate 11 (¶ [0008]). The light guide plate 11 appears to be formed of a single material with a uniform index of refraction.

However, Aihara fails to teach or suggest that “an end portion of said parallel groove is narrowed toward said rectangular light exit surface symmetrically with respect to a center line of said parallel groove perpendicular to said rectangular light exit surface in a sectional shape of said parallel groove in said direction perpendicular to said rectangular light exit surface,” as recited in claim 1 (emphasis added). In contrast, Figs. 1 and 2 of Aihara show that the slot 14 has a rectangular-shaped cross section in which the vertical sides are parallel, such that the distance between the vertical sides is a constant. However, the Examiner maintains that it would have been obvious to a person of ordinary skill in the art to modify the slot 14 of Aihara to be V-shaped as disclosed in Furukawa. According to the Examiner, the motivation for modifying Aihara would have been to increase the luminance of the light guide plate 11.

Further, as the Examiner concedes, Aihara fails to teach or suggest that the narrowing of the parallel groove is “in accordance with a ratio of a peak value of illuminance or luminance of emitted light from said bar-like light source accommodated in said parallel groove at a first portion of said rectangular light exit surface corresponding to said parallel groove to an average value of said illuminance or luminance of said emitted light at second portions corresponding to said inclined rear portions,” as recited in claim 1. However, the Examiner maintains that it would have been obvious to design the narrowing of the V-shaped slot based on the ratio as recited in claim 1, because “where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only ordinary skill in the art” (Office Action, page 6). Applicants respectfully disagree.

The MPEP states: “A particular parameter must be first recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.”

(MPEP § 2144.05 (II)(B), *citing In re Antonie*, 559 F.2d 618 (CCPA 1977)). The claim at issue in *In re Antonie* recited a wastewater treatment device that had a ratio of tank volume to contractor area of 0.12 gal./sq.ft. The prior art did not recognize that the desired result (large treatment capacity) was a function of the ratio of the tank volume to the contractor area. Thus, the court held that the parameter (ratio of tank volume to contractor area) that would have to be optimized to achieve the claimed limitation was not recognized in the art to be a *result-effective variable*. (*Id.*)

Similarly, none of the cited art recognizes that *any* desired result is a function of the sectional shape of the parallel groove. For example, none of the cited art recognizes that adjusting the sectional shape of the narrowed parallel groove would affect the amount or distribution of luminance from the light guide plate. On the contrary, Furukawa uses the tabular lightguides 5a, 5b, 5c, 5d, 5e, and 5f with increasing indices of refraction to achieve a uniform brightness at the surface of the optical waveguide device (¶¶ [0021] – [0022], [0047]).

Therefore, the sectional shape of the narrowed parallel groove recited in claim 1 is not recognized in the art to be a *result-effective variable*. Consequently, it would not have been obvious to a person of ordinary skill in the art to optimize this parameter. Specifically, it would not have been obvious to a person of ordinary skill in the art to narrow the parallel groove based on the ratio recited in claim 1. Further, Applicants submit that the Examiner is using impermissible hindsight in combining only the shape of the parallel groove of Furukawa with the backlight of Aihara.

Applicants submit that claim 1 is patentable over Aihara at least by virtue of the aforementioned differences, as well as its additionally recited features. Further, Furukawa, Konishige, Ide, and Yokoyama each fail to remedy the deficiencies in Aihara. Therefore, claim

1 is patentable over Aihara, Furukawa, Konishige, Ide, and Yokoyama. Because independent claims 3, 21, and 24 recite features similar to those discussed above with regard to claim 1, Applicants submit that claims 3, 21, and 25 are patentable over Aihara, Furukawa, Konishige, Ide, and Yokoyama for similar reasons. Further, claims 2, 4-18, 22, 23, and 26 are patentable over Aihara, Furukawa, Konishige, Ide, and Yokoyama at least by virtue of their respective dependencies on claims 1, 21, and 25, as well as their additionally recited features.

Claims 20 and 24

Claims 20 and 24 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kunishige. Applicants respectfully traverse this ground of rejection.

Independent claims 20 and 24 recite that “an end portion of said parallel groove is narrowed toward said rectangular light exit surface symmetrically with respect to a center line of said parallel groove perpendicular to said rectangular light exit surface in a sectional shape of said parallel groove in said direction perpendicular to said rectangular light exit surface” (emphasis added). Applicants submit that Kunishige fails to teach or suggest the quoted claim feature. Instead, Figs. 1 and 2 of Kunishige show that gap between the light transmission plates 4 and 5 in which the light source 3 is positioned has a rectangular-shaped cross section in which the vertical sides are parallel, such that the distance between the vertical sides is a constant.

Further, Applicants submit that Kunishige fails to teach or suggest that the narrowing of the parallel groove is “in accordance with a ratio of a peak value of illuminance or luminance of emitted light from said bar-like light source accommodated in said parallel groove at a first portion of said rectangular light exit surface corresponding to said parallel groove to an average value of said illuminance or luminance of said emitted light at second portions corresponding to said inclined rear portions,” as recited in claims 20 and 24.


As discussed above, the sectional shape of the narrowed parallel groove recited in claims 20 and 24 is not recognized in the art to be a *result-effective variable*. Consequently, it would not have been obvious to a person of ordinary skill in the art to optimize this parameter. Specifically, it would not have been obvious to a person of ordinary skill in the art to narrow the parallel groove based on the ratio recited in claims 20 and 24. Therefore, Applicants submit that claims 20 and 24 are patentable over Kunishige at least by virtue of the aforementioned differences, as well as their additionally recited features.

III. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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